



## Physics

Time Remaining: 45/45 (Minutes)

Q.1

Test 8 Waves

Physics Unit Wise

A source of sound wave emits wave of frequency  $f$ . If ' $v$ ' is speed of sound waves. Then what will be the wavelength of the wave

A)  $\frac{v}{f}$

B)  $\frac{v-u}{f}$

C)  $vf$

D)  $(v-u)f$

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Correct Answer:

☐ A ☐ B ☐ C ☐ D

Next



Time Remaining: 44/45 (Minutes)

Q.2

Test 8 Waves

Physics Unit Wise

The fundamental frequency of a string is proportional to

- A) Inverse of the length
- B) The diameter
- C) Tension
- D) Density

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Correct Answer:

☒ A ☐ B ☐ C ☐ D

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Time Remaining: 44/45 (Minutes)

Q.3

Test 8 Waves

Physics Unit Wise

The frequency of an open organ pipe is  $f$ . If one end is closed then its fundamental frequency will be:

A)  $f/2$

B)  $3f/4$

C)  $f$

D)  $2f$

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Correct Answer:



A



B



C



D

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Time Remaining: 44/45 (Minutes)

Q.4

Test 8 Waves

Physics Unit Wise

The length of a string is 1m, tension in it is 40N and mass of the string is 0.1 kg. Then the velocity of transverse waves produced in the string will be:

A)  $400 \text{ ms}^{-1}$

B)  $180 \text{ ms}^{-1}$

C)  $80 \text{ ms}^{-1}$

D)  $20 \text{ ms}^{-1}$

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Correct Answer:



A



B



C



D

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Time Remaining: 44/45 (Minutes)

Q.5

Test 8 Waves

Physics Unit Wise

When an observer is approaching a stationary source with a velocity  $v_o$  then the apparent frequency observed by him will be:

A)  $\frac{v}{v+v_o} f$

B)  $\frac{v}{v_o} f$

C)  $\frac{v+v_o}{v} f$

D)  $\frac{v_o}{v} f$

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Correct Answer:



A



B



C



D

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Time Remaining: 44/45 (Minutes)

Q.6

Test 8 Waves

Physics Unit Wise

If velocity of sound in air be  $350 \text{ ms}^{-1}$ , then the fundamental frequency of an open pipe of length 50 cm is:

A) 175 Hz

B) 350 Hz

C) 700 Hz

D) 500 Hz

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Correct Answer:



A



B



C



D

Next

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Time Remaining: 44/45 (Minutes)

Q.7

Test 8 Waves

Physics Unit Wise

The ratio of phase difference and path difference is:

A)  $2P$

B)  $\frac{2\pi}{\lambda}$

C)  $\frac{\lambda}{2\pi}$

D)  $\frac{\pi}{\lambda}$

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Correct Answer:



A



B



C



D

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Time Remaining: 44/45 (Minutes)

Q.8

Test 8 Waves

Physics Unit Wise

When a light ray passes through one medium to another

- A) Its wavelength changes
- B) Its frequency changes
- C) Both A and B change
- D) None of these

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Correct Answer:

☒ A ☐ B ☐ C ☐ D

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Time Remaining: 44/45 (Minutes)

Q.9

Test 8 Waves

Physics Unit Wise

Doppler Effect is used to monitor blood flow through major arteries by ultrasound waves of frequency.

- A) 5 Hz to 10 Hz      B) 5 MHz to 10 MHz  
C) 5 kHz to 10 kHz      D) 5 GHz to 10 GHz

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Correct Answer:

☒ A   ☐ B   ☐ C   ☐ D

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Time Remaining: 43/45 (Minutes)

Q.10

Test 8 Waves

Physics Unit Wise

The fixed ends of a vibrating string act as

- A) Antinodes      B) Overtone  
C) Nodes          D) Harmonics

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Correct Answer:

☒ A   ☐ B   ☐ C   ☐ D

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Time Remaining 43/45 (Minutes)

Q11

Test 8 Waves

Physics Unit Wise

Two waves having same frequency travelling along same line in opposite direction, will produce

- A) interference      B) beats  
C) stationary waves      D) Doppler's effect

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Time Left: 43/45 (Minutes)

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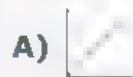
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**Time Remaining 43/45 (Minutes)****Q.12****Test 8 Waves****Physics Unit Wise**

**Which graph represents the variation of waves wave length with speed**

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Time Remaining: 43:45 (Minutes)

Q.13

Test 8 Waves

Physics Unit Wise

Velocity of sound on free space at  $0^{\circ}\text{C}$

- A) 332 m/s      B) 224 m/s  
C) 76 m/s      D) zero

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Time Remaining 43/45 (Minutes)

3.14

Test 8 Waves

Physics Unit Wise

Velocity of sound increases twice of its value at  $0^{\circ}\text{C}$  when temp increases

A)  $313^{\circ}\text{C}$

B)  $819^{\circ}\text{C}$

C)  $859^{\circ}\text{C}$

D)  $80^{\circ}\text{C}$

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1 2 3 4

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Time Remaining: 43:45 (Minutes)

Q.15

Test 8 Waves

Physics Unit Wise

Wavelength is defined as distance between two particles of medium having a phase difference

A)  $\frac{\pi}{2}$  rad

B)  $\pi$  rad

C)  $\frac{3\pi}{2}$  rad

D)  $2\pi$  rad

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0123

4567

8910

1112

1314

Don't Worry



4



11



12



13

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Time Remaining 43/45 (Minutes)

Q.18

Test 8 Waves

Physics Unit Wise

The increase in the velocity of sound for each 1 °C increase in temperature in air is

- A) 61 m/s                      B) 6.1 m/s  
C) 0.61 m/s                  D) 6.1 cm/s

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Time Left: 43/45 Made 0/0 Correct

Score of Attempt

0/4 0/11 0/12 0/10

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Time Remaining: 43/45 (Minutes)

Q.17

Test 8 Waves

Physics Unit Wise

A sound wave has a  $\lambda$  in air at  $17^\circ\text{C}$  at  $27^\circ\text{C}$ , a wave

A)  $\lambda = \sqrt{\frac{17}{27}}$

B)  $\lambda = \sqrt{\frac{27}{17}}$

C)  $\lambda = \sqrt{\frac{290}{300}}$

D)  $\lambda = \sqrt{\frac{300}{290}}$

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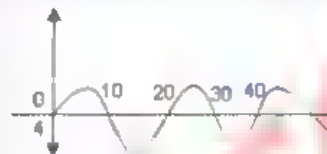
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**Time Remaining 45:45 (Minutes)****Q18****Test 8 Waves****Physics Unit Wise****The wavelength of the wave shown****A) 8****B) 10****C) 20****D) 30****STAR INSTITUTE LAHORE****Time Taken: 00:00:00****Don't Worry!****Next****Back**



Time Remaining 42/45 (Minutes)

Q.17

Test 8 Waves

Physics Unit Wise

Which one of the following properties of sound is not affected by change in temperature

- A) Amplitude                      B) Frequency  
C) speed                              D) Wavelength

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0123456789101112131415161718192021222324252627282930313233343536373839404142434445464748495051525354555657585960616263646566676869707172737475767778798081828384858687888990919293949596979899100

Don't Know

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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Time Remaining 42/45 (Minutes)

Q.10

Test 8 Waves

Physics Unit Wise

If two waves of amplitude 'a' produce a resultant wave of 2a amplitude, then they have phase difference of

- A)  $0^\circ$   
C)  $120^\circ$

- B)  $90^\circ$   
D)  $180^\circ$

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Time taken: 00:00:00

Score: 0/10

0/10

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Time Remaining 45 (Minutes)

Test 8 Waves

Physics Unit Wise

Motion of electron around the nucleus is an example of

- A) Linear motion
- B) Simple harmonic motion
- C) Angular motion
- D) None of these

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Don't Know



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Time Remaining 41 / 45 (Minutes)

Q.12

Test 8 Waves

Physics Unit Wise

When two wave of same frequency and constant phase difference interfere there is

- A) creation of energy
- B) Loss of energy
- C) Redistribution of energy
- D) Redistribution of energy with its total value remaining same

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Correct Answer is:

☒ A ☐ B ☐ C ☐ D

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Time Remaining 41 / 45 (Minutes)

Q.13

Test 8 Waves

Physics Unit Wise

At the open end of an organ pipe

- A) Nodes are formed
- B) Anti nodes are formed
- C) Nodes or anti-nodes are formed
- D) None

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0123456789101112131415161718192021222324252627282930313233343536373839404142434445464748495051525354555657585960616263646566676869707172737475767778798081828384858687888990919293949596979899100

Don't Worry

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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Time Remaining 41/45 (Minutes)

Q.14

Test 8 Waves

Physics Unit Wise

A 200 wave pass through a point in the medium in 1sec with a speed of 20m/s then wave length

A) 20m

B) 2m

C) 400m

D) 0.1m

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Time taken to make Download

Don't know



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Time Remaining 41/45 (Minutes)

Q.15

Test 8 Waves

Physics Unit Wise

In a standing wave  $\lambda = l$  where  $l$  is length of string, the no. of loops on string are

A) 1

B) 2

C) 3

D) 4

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Don't Worry

4 11 12 13

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Time Remaining 41/45 (Minutes)

Q.16

Test 8 Waves

Physics Unit Wise

How does a speed  $v$  of sound in air depend on atmospheric pressure

A)  $V \propto P^{-1}$

B)  $V \propto P^{1/2}$

C)  $V \propto P^2$

D) independent  $P$

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Don't Know



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Time Remaining 41/45 (Minutes)

Q.17

Test 8 Waves

Physics Unit Wise

The ratio of speed of sound in moist air to that dry air is always

- A) Greater than one      B) Equal to one  
C) Less than one        D) Zero

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Time Left: 41/45 (Minutes)

Don't Worry



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**Time Remaining 41 / 45 (Minutes)****Q.18****Test 8 Waves****Physics Unit Wise**

Air column in a pipe closed at one end is in resonance with a tuning fork of frequency 264 Hz. If the velocity of sound is  $332 \text{ ms}^{-1}$ , then the length of air column is appropriately:

- A) 31.4 cm                      B) 62.5 cm  
C) 93.8 cm                      D) 125 cm

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Time Remaining: 40/45 (Minutes)

Q.29

Test 8 Waves

Physics Unit Wise

A stretched wire with clamped ends has a fundamental frequency of 1000 Hz. What will be the new fundamental frequency if the tension in the wire increase by 2 times?

A) 980 Hz

B) 1020 Hz

C) 1010 Hz

D) 1410 Hz

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Correct Answer:



A



B



C



D

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## Physics

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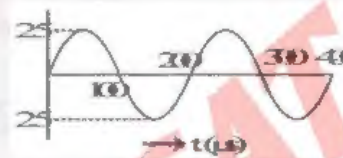
Q.30

Test 8 Waves

Physics Unit Wise

The diagram below represents the variation with time of displacement of a point in air through which a sound wave is travelling at  $340 \text{ ms}^{-1}$ . What is the frequency of the wave?

- A) 1.7 Hz
- B)  $5.0 \times 10^3 \text{ Hz}$
- C)  $1.6 \times 10^4 \text{ Hz}$
- D)  $3.1 \times 10^4 \text{ Hz}$



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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Submit Quiz

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## Waves # 02

### Answer key

1 A 2 A 3 A 4 D 5 C 6 B 7 B  
8 A 9 B 10 C 11 C 12 A 13 D 14 B  
15 D 16 C 17 C 18 C 19 B 20 A 21  
22 D 23 B 24 D 25 B 26 D 27 A 28 A  
29 D 30 B

MCO # 04  $v = \sqrt{T/\mu} = \frac{40}{1/10} \sqrt{400} = 20 \text{ ms}^{-1}$

MCO # 06  $f' = f \frac{nv}{2l} = \frac{1 \times 350}{2 \times 0.5} = 350 \text{ Hz}$

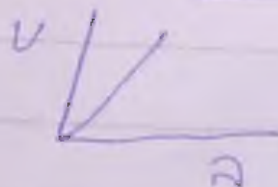
$2\pi$  - phase difference

$\lambda$  - wave length

$\Delta$  - Path difference

$$\frac{2\pi}{\lambda}$$

MCO D  $v = f\lambda$   $f = \text{same}$   $[v \propto \lambda]$



MCO B Sound not travel in vacuum due to its mechanical nature

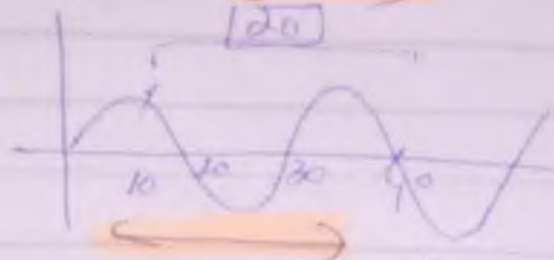
MCO 14  $T' = n^2 T = (2)^2 T = 4 \times (6^\circ)$   
 $(4 \times 273 \text{ K})$   
 $= 1092 - 273 = 819^\circ \text{C}$

MCE 17  $[V \propto \lambda] \quad f = \text{same}$

$[\lambda \propto T^2]$  Just As speed of Sound

$$\frac{\lambda_1}{\lambda_2} = \sqrt{\frac{290}{300}}$$

MCE #18



MCE 24

$$v = f\lambda \quad \lambda = \frac{v}{f} = \frac{200}{200} [0.1]$$

MCE 25

$$\lambda = 2 \text{ loop} = \frac{2L}{n}$$

$$\text{If } \lambda = L \quad L = \frac{2L}{n} = \frac{2}{n}$$

MCE No 28

$$f = \frac{v}{\lambda} = \frac{1}{l} \quad l = \frac{v}{4f} = \sqrt{\frac{332}{4 \times 264}}$$

Ans  $\approx \frac{1}{3}$

$$\text{Approx} = \frac{8 \times 332}{4 \times 264} = \frac{1}{3}$$

MCE 29  $= f \propto \sqrt{T} \quad \sqrt{2T} = \sqrt{78} = \sqrt{1000} \times \sqrt{2}$

$$1000 \times 141 = [1410]$$

MCE 30

$T = 200 \text{ microsecond} \quad f = ?$

$v = 340 \text{ ms}^{-1}$

$$f = \frac{1}{T} = \frac{1}{200 \times 10^{-6}} = \frac{10^6}{200}$$

$$= \frac{10^4}{2} = \frac{10000}{2} = 5000 = [5 \times 10^3 \text{ Hz}]$$